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INTERSTATE ANTELOPE CONFERENCE



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1981 TRANSACTIONS

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INTERSTATE ANTELOPE CONFERENCE

1981 TRANSACTIONS

Papers presented at the annual meeting held in Alturas, California on March 10, 1981 are included in these transactions.

Sheldon-Hart Mountain, California
Nevada
Oregon

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CALIFORNIA DEPARTMENT OF FISH AND GAME

These transactions are available from the Chairman subject to a very limited supply.

CONFERENCE GUIDELINES

1. The annual meeting will be held on the second Tuesday in March at Altamira, California. The 1982 meeting will be held on March 8, 1982.
2. The chairmanship of the conference will rotate between the four agencies represented. Nevada will provide the 1982 Chairman, with Oregon and the USFWS following in that order. The 1983 Chairman will be responsible for conducting the 1983 meeting.

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3. Each contributing agency shall provide 100 unstapled copies of their formal presentation. These shall be on standard 8-1/2" x 11" paper with pages unnumbered, printed single space on one side only, and with a margin of 1-1/4 inches for binding. The first page of the report shall contain the title, author's name, author's title, and organization.

SUBJECT

Conference Guideline

Attendance Roster

Annual Reports

California

Sheldon-Hart Mountain Refuges

Nevada

Oregon

California Department of Fish and Game
1416 Ninth Street
Sacramento, California 95814

Nevada Department of Wildlife
P.O. Box 10678
Reno, Nevada 89509

Oregon Department of Fish and Wildlife
P.O. Box 3504
Portland, Oregon 97208

Chairman: L. "Bud" Pyshora
California Department of Fish and Game
P.O. Box 1480
Redding, CA 96099

Bureau of Land Management
100 South Street
Reno, Nevada 89501

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4. The Chairman is responsible for compilation of the Conference Transactions covering that period for which he serves.
5. Transactions will be distributed in accordance with standing requests of participating agencies. Additional requests from other agencies, departments, and bureaus shall be honored at the discretion of the Chairman subject to availability. Added requests received by Conference members should be forwarded to the Chairman with a "Send" or "No Send" recommendation. Distribution of the 1978 Transactions was as follows:

<u>AGENCY</u>	<u>NO. COPIES</u>
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Nevada Department of Wildlife P.O. Box 10678 Reno, Nevada 89510	15
Oregon Department of Fish and Wildlife P.O. Box 3503 Portland, Oregon 97208	15
Bureau of Land Management Federal Office Building 2800 Cottage Way, Room E-2820 Sacramento, California 95825	4
Bureau of Land Management 300 Booth Street Reno, Nevada 89502	6

<u>AGENCY</u>	<u>NO. COPIES</u>
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Modoc National Forest P.O. Box 611 Alturas, California 96101	6
Fremont National Forest P.O. Box 551 Lakeview, Oregon 97630	2
U. S. Fish and Wildlife Service Klamath Falls Group P. O. Box 128 Klamath Falls, Oregon 97601	10

6. The current Chairman shall notify the following as to the time and place of the Conference. These individuals will have the responsibility for notifying those interested parties in his particular jurisdiction as to the time and place of the meeting.

<u>NAME</u>	<u>AGENCY</u>	<u>ADDRESS</u>
Director	Nevada Department of Wildlife	P.O. Box 10678 Reno, Nevada 89510
Paul Ebert	Oregon Department of Fish and Wildlife	P.O. Box 3503 Portland, OR 97208
Dave Luman	Bureau of Land Management	P.O. Box 2965 Portland, OR 97208
District Manager	Oregon Department of Fish and Wildlife	P.O. Box 8 Hines, OR 97738
Stan Thompson	California Department of Fish and Game	P.O. Box 1480 Redding, CA 96099
Refuge Manager	Sheldon-Hart Mountain Refuges	P.O. Box 111 Lakeview, OR 97630
Refuge Manager	Klamath Basin National Wildlife Refuges	Route 1, Box 74 Tulelake, OR 97630
Superintendent	Lava Beds National Monument	P.O. Box 867 Tulelake, CA 96134

ATTENDANCE ROSTER

<u>NAME</u>	<u>ORGANIZATION</u>	<u>ADDRESS</u>
Jim Jeffress	Nevada Department of Wildlife	P.O. Box 10678 Reno, NV 89520
Bill Britton	Modoc National Forest	P.O. Box 611 Alturas, CA 96101
Richard Voss	U.S. Fish and Wildlife Service	Rt. 1, Box 74 Tulelake, CA 96134
Jim Hainline	U.S. Fish and Wildlife Service	Rt. 1, Box 74 Tulelake, CA 96134
Paul Roush	Bureau of Land Management	Box 771 Alturas, CA 96101
Ken Voget	U.S. Fish and Wildlife Service	P.O. Box 111 Lakeview, OR 97630
Jim Lemos	Oregon Department of Fish and Wildlife	P.O. Box 8 Hines, OR 97738
Clark Bloom	U.S. Fish and Wildlife Service	Box 1610 Alturas, CA 96101
Mitch Willis	Oregon Department of Fish and Wildlife	P.O. Box 8 Hines, OR 97738
Jim Yoakum	Bureau of Land Management	University of Nevada Renewable Resource Ctr. 1100 Valley Road Reno, NV 89512
Roger Farschon	Bureau of Land Management	P.O. Box 460 Cedarville, CA 96104
Dennis Schramm	National Park Service Lava Beds Nat'l Mmnt.	P.O. Box 867 Tulelake, CA 96134
Jim Sleznick, Jr.	National Park Service Lava Beds Nat'l Mmnt.	P.O. Box 867 Tulelake, CA 96134
Doug Thayer	California Department of Fish and Game	P.O. Box 1623 Alturas, CA 96101
L. "Bud" Pyshora	California Department of Fish and Game	P.O. Box 1480 Redding, CA 96099

<u>NAME</u>	<u>AGENCY</u>	<u>ADDRESS</u>
Forest Supervisor	Fremont National Forest	P.O. Box 551 Lakeview, OR 97530
Director	Idaho Department of Fish and Game	P.O. Box 25 Boise, Idaho 83707
Bill Radtky	Bureau of Land Management	Federal Office Bldg. 2800 Cottage Way Room E-2820 Sacramento, CA 95825
Forest Supervisor	Modoc National Forest	P.O. Box 611 Alturas, CA 96101
Jim Yoakum	Bureau of Land Management	University of Nevada Renewable Resource Ctr. 1100 Valley Road Reno, Nevada 89512
Superintendent	National Park Service Klamath Falls Group	P.O. Box 128 Klamath Falls, OR 97601

STATE OF CALIFORNIA
THE RESOURCES AGENCY
DEPARTMENT OF FISH AND GAME

I. Herd Surveys

a. Annual Census

The northeastern California annual aerial census of antelope was conducted January 11, 12, 13, 14 and 15, 1982. Antelope were well scattered on winter ranges. Counting conditions were poor to fair. Hazy light conditions and patchy snow cover on winter ranges prevailed throughout the census period. Good coverage of all winter ranges was achieved. No antelope were found on interstate ranges in Surprise Valley.

Six-thousand nine-hundred eight-four (6,984) antelope were counted in the basic California population. The 1982 count is the highest on record and is 79 animals higher than the 1981 count. The 1982 count is 630 animals or 10 percent higher than the five-year average of 6,354. The 1982 population is 5,204 animals or 292 percent higher than the low population year of 1960 with 1,780 antelope.

b. Buck-Doe Ratio

The annual aerial herd composition survey in northeastern California was conducted July 20, 21, 22, 23 and 24, 1981. Survey techniques were the same as used in previous years. A modified sampling method has been used since 1977 (see 1977 report).

During the 1981 survey three-thousand two-hundred seventeen (3,217) antelope were classified. The buck ratio was 31 bucks per 100 does. This ratio is up one buck per 100 does over 1980 and two bucks per 100 does over the previous five-year average.

c. Production

The 1981 kid ratio, obtained during the summer herd composition counts, was 40 kids per 100 does. This ratio was 5 kids per 100 does above the 1980 ratio and 1 kid per 100 does over the previous five-year average. The 1981 ratio was the highest since 1976 and was the first substantial increase in the kid ratio since 1975. However, the 1981 kid ratio is still well below the long-term average ratio of 53 kids per 100 does.

d. Harvest

The eighteenth consecutive hunt was held in northeastern California during the period of August 29 through September 7, 1981. Four-hundred

fifty-one (451) permits for adult bucks were issued for the regular season. Twenty-five (25) doe permits were issued for a special zone to alleviate an agricultural depredation problem. Forty-four (44) adult buck permits were also issued for an archery only season during the period of August 15 through August 23, 1981. A total of 520 permits was issued in 1981. The fee for all permits was \$35.

The hunt area was again divided into the same seven zones. The Big Valley Zone encompassed an additional smaller subzone for which the doe permits were issued. This subzone was enlarged in 1981 to encompass more agricultural land. Archery permits were valid throughout the designated hunt area without restriction to specific zones.

The eleventh annual hunter orientation session was held in Alturas the day before the regular season hunt began. There were 190 people in attendance. At least 88 of these were permit holders. The 88 permit holders at the session represent 18 percent of the regular season and doe hunters. Archery hunters are not included in the orientation as the archery season is held prior to the session.

All hunters were required to report on the success of their hunt through the tag and report card system. Hunters reported taking 450 antelope—429 were bucks and 21 were does. Four-hundred fifty-one (451) regular season permit holders took 421 bucks for 93 percent success. This was the highest regular season hunter success recorded for California. The previous record high was 88 percent, occur in 1978 and 1979. Twenty-five (25) doe permit holders reported taking 21 does for a hunter success ratio of 84 percent. Forty-four (44) archery hunters reported taking 8 bucks for a hunter success ratio of 18 percent. Overall hunter success for 1981 was 87 percent. Regular season hunter success for the previous five years averaged 85 percent and for the previous seventeen years averaged 77 percent.

The percent of yearlings in the kill was 13 percent; down one percent from 1980 with 14 percent. During the previous 14 hunts, the percent of yearlings in the kill has ranged from 2 to 36 percent. The percent of four years and older age class bucks in the 1981 kill was 39 percent. This was down from the 43 percent recorded in 1980 and the 47 percent recorded in 1979. (One hundred thirteen (113) bucks were aged during the 1981 regular season.)

California has issued 6,108 (includes regular season, does and archery) permits during the past eighteen years. During this period hunters have reported taking 4,754 antelope for a success ratio of 78 percent. Antelope numbers are 167 percent higher in 1982 than they were in 1964 when the hunts began.

The California Department of Fish and Game has requested a 650 permit special antelope hunt for 1982. The request calls for:

560 regular season buck permits. (Hunt to be held in 6 zones instead of 7 as in previous hunts. The change in hunt boundaries would more nearly conform to subherd boundaries.)

30 doe permits (This hunt would be held in a special subzone to alleviate crop depredation.)

60 preseason archery permits. (This hunt would be held area wide with hunters not being restricted to any one zone.)

II. Range Surveys

a. Weather Conditions

Seasonal precipitation for 1980-81 was below normal. Water supplies for 1981 were considered to be fair. Seasonal precipitation through February of 1982 is about 13 percent above normal.

b. Range Modifications

None specifically for antelope.

c. Range Conditions

Forage conditions for 1981 were considered to be good.

III. Miscellaneous

a. Disease

No disease outbreaks were reported in 1981.

b. Tagging and Marking

No tagging and marking programs were conducted in 1981.

A trapping and relocation project is planned for March, 1982. It is planned to trap 160+ antelope in Butte Valley, Siskiyou County. Approximately one half of these will be relocated to Mono County and one half to Lassen County. The San Diego Zoo has requested six animals. It is planned to monitor the Mono County group with 8 to 10 radio transmitter collars. In addition, approximately 20 percent of the antelope will be marked with numbered ear tags and colored streamers. The Lassen County group will be similarly marked and monitored if transmitters are available.

IV. Summary

The basic California antelope population was shown to be 6,984 animals by the 1982 census. This count is up 79 animals over the 1981 count. California's antelope population is 292 percent higher than in 1960.

The 1981 buck ratio was 31 bucks per 100 does. This is up one buck per 100 does over 1980 and up two bucks per 100 does over the previous five-year average.

The 1981 kid ratio was 40 kids per 100 does. This is up 5 kids per 100 does over 1980 and one kid per 100 does over the five-year average. This is the first substantial increase in the kid ratio since 1975 but is well below the the long-term average of 53 kids per 100 does.

The eighteenth consecutive hunt was held in 1981. Five-hundred twenty (520) permits were issued. Four-hundred ninety-five (495) of these were adult buck permits. Of these, 44 were archery only permits. In addition to the buck permits 25 doe permits were issued for agriculture depredation relief in a subzone.

Four-hundred fifty-one (451) regular season hunters took 421 bucks for 93 percent success. Forty-four (44) archery hunters took 8 bucks for 18 percent success. Twenty-five (25) doe hunters took 21 does for 84 percent success. Overall 520 permit holders took 450 antelope for 87 percent hunter success.

Range conditions for 1981 were considered to be good.

TABLE I

*Winter Aerial Census in Northeastern California

YEAR	TOTAL COUNTED	**ERRATIC WINTER POPULATION	BASIC CALIFORNIA POPULATION
1977	4908	0	4908
1978	5872	0	5872
1979	5098	Not Checked	5098
1980	6910	0	6910
1981	6905	Not Checked	6905
1982	6984	0	6984

*See 1977 report for prior years.

**Erratic winter populations occupying ranges east of the Warner Mountains subtracted from total leaves the basic California population.

TABLE II

***Antelope Herd Composition Summary**

<u>YEAR</u>	<u>POPULATION</u>	<u>RATIO</u>			<u>NO. CLASSIFIED</u>
		<u>BUCKS:</u>	<u>DOES:</u>	<u>KIDS</u>	
1976	4869	**26	100	**48	2886
1977	4908	**29	100	**38	2873
1978	5872	**32	100	**39	2557
1979	5098	**29	100	**37	3024
1980	6910	30	100	35	3558
1981	6905	31	100	40	3217

* See 1977 report for prior years.

**Transcribing error corrected from 1979 report.

TABLE IV

***Antelope Killed Under Special Archery Regulations**

<u>YEAR</u>	<u>PERCENT ISSUED</u>	<u>ESTIMATED KILL</u>	<u>KILLING RATIO</u>
1979	*25	1	.04
1981	*44	2	.12

* Hunt was held in Sugarloaf Valley zone during regular season dates for archery only.

**Possession hunt held area wide. Archery was not restricted to zones.

TABLE III

*Buck Antelope Kill by Regular Season

<u>YEAR</u>	<u>PERMITS ISSUED</u>	<u>REPORTED KILL</u>	<u>HUNTER SUCCESS RATIO</u>
1976	375	306	.82
1977	325	271	.83
1978	400	352	.88
1979	374	329	.88
1980	**444	374	.84
1981	451	421	.93

* See 1977 report for prior years

**Does not include the archery zone.

TABLE IV

Buck Antelope Killed Under Special Archery Regulations

<u>YEAR</u>	<u>PERMITS ISSUED</u>	<u>REPORTED KILL</u>	<u>HUNTER SUCCESS RATIO</u>
1980	*25	1	.04
1981	**44	8	.18

* Hunt was held in Surprise Valley zone during regular season dates for archers only.

**Preseason hunt held area wide. Archers were not restricted to zones.

1981 ANTELOPE STATUS REPORT

TABLE V

Doe Antelope Killed in Special Subzone

Kenneth W. Voigt, Assistant Refuge Manager
U. S. Fish & Wildlife Service

<u>YEAR</u>	<u>PERMITS ISSUED</u>	<u>REPORTED KILL</u>	<u>HUNTER SUCCESS RATIO</u>
*1980	20	15	.75
1981	25	21	.84

*Doe permits were issued for first time in 1980. Subzone was established in Big Valley area to alleviate crop depredation.

Wintering herds of the Shoshone-Bannock Mountain Biological Unit* have traditionally wintered on Big Springs Table along the Nevada/Oregon state line and to a lesser degree on Snake Table. February of 1979 witnessed the largest buildup of recent years on Big Springs Table of over 2,400 antelope. Subsequent winters of 1979-80 and 1980-81 have been relatively mild and no large build-up of wintering numbers has been seen on these specific sites.

Winter populations within the Shoshone-Bannock Mountain Biological Unit has averaged approximately 2,375 animals annually over the last 10 years.

1. The 1981 winter herd composition and count survey recorded and classified the largest number of antelope in recent years (since a systematic census procedure was developed in 1955). A total of 3,361 antelope were counted and classified during July, 1981. The previous high count was 2,850 in 1968. The ratio of kids/100 adults on the combined units was 32/100, up significantly from a ratio of 31/100 in 1980.

* Biological Unit described in the 1973 Conference Report

1981 ANTELOPE STATUS REPORT

SHELDON NATIONAL WILDLIFE REFUGE AND HART MOUNTAIN NATIONAL ANTELOPE REFUGE

Kenneth W. Voget, Assistant Refuge Manager
U. S. Fish & Wildlife Service

I. HERD SURVEYS

A. Annual Census

1. The winter census was discontinued in 1981 due to two main factors: (1) Budget tightening; and (2) The winter antelope populations are normally present in a few primary wintering areas and censused by the Oregon Department of Fish and Wildlife, creating a duplication of effort if we also flew a census.

Wintering herds of the Sheldon-Hart Mountain Biological Unit* have traditionally centered on Big Springs Table along the Nevada/Oregon state line and to a lesser degree on Gooch Table. February of 1979 witnessed the largest build-up of recent years on Big Springs Table of over 2,800 antelope. Subsequent winters (1979-80 and 1980-81) have been relatively mild and no large build-up of wintering numbers has been seen on these specific sites.

Winter populations within the Hart Mountain-Sheldon Biological Unit has averaged approximately 2,275 animals annually over the last 10 years.

2. The 1981 summer herd composition and trend survey recorded and classified the largest number of antelope in recent years (since a systematic census procedure was developed in 1955). A total of 3,283 antelope were counted and classified during July, 1981. The previous high count was 2,859 in 1980. The ratio of kids/100 adults on the combined units was 32/100, up significantly from a ratio of 21/100 in 1980.

* Biological Units described in the 1975 Conference Report

Table I. Summer Herd Ratios

<u>5-year Averages</u>	<u>Numbers Classified</u>		
	<u>Sheldon Biological Unit</u>	<u>Hart Mountain Biological Unit</u>	<u>Combined Biological Unit</u>
1955-59	1007	685	1690
1960-64	1148	635	1783
1965-69*	897	432	1329
1970-74	863	481	1344
1975-79	1028	632	1660
1980	1793	1066	2859
1981	1927	1356	3283

* Predator control was discontinued after 1964

Table II. Summer Herd Ratios

<u>5-year Averages</u>	<u>Bucks/100 Does</u>		
	<u>Sheldon Biological Unit</u>	<u>Hart Mountain Biological Unit</u>	<u>Combined Biological Unit</u>
1955-59	49	34	42
1960-64	45	43	45
1965-69*	53	34	46
1970-74	43	26	37
1975-79	31	25	29
1980	23	34	28
1981	32	36	34

* Predator control was discontinued after 1964

Table I. illustrates a gradual increase in total population since a low during 1965-69. On a more defined scale there has been many highs and lows in population numbers and production ratios but a general increasing trend is apparent.

B. Buck-Doe Ratio

Buck to doe ratios were higher on all units than has been seen for several years previously. In 1981, the buck to doe ratio for the combined units was 34.2/100 compared to 27.5/100 in 1980 and 32/100 in 1979. Hart Mountain supported a ratio of 36.2/100, highest in many years but has been steadily climbing in the last five years. Sheldon supported a buck to doe ratio of 32.7/100. Overall combined unit averages have ranged between 26-29/100 so a gradual increase buck/doe ratios is apparent. (See Table II.)

C. Production

Sheldon and Hart Mountain enjoyed one of the best antelope production years in recent years. From a census flown in late July, Sheldon supported a kid/100 doe ratio of 44.5/100, the highest since 1970. Hart Mountain produced a ratio of 39.7 kids/100 does also highest in recent years. As depicted by Table III, kids/doe ratios were consistently high on the areas prior to the discontinuance of predator (coyote) control in 1965. After 1964, a dramatic drop in kids/100 does ratios was highly evident. Since 1965, populations and production ratios have varied a great deal. (See Table III.) However, in the last few years we have witnessed a gradual increase in all categories. Many factors undoubtedly contribute to this. The past two winters have been relatively mild, allowing a good carry-over of breeding age animals and general good herd health. Although coyote hunting is not allowed on the refuges, increased prices for coyote hides has created tremendous pressure on coyotes throughout the areas of the Biological Units and to some degree, removal of coyotes from the refuges themselves although illegal. Coyote predation on Sheldon is still the major source of fawn mortality as substantiated by recent studies. Grazing programs on Sheldon have been changed substantially since 1976 and vegetation responses are illustrating this change in several areas.

Trying to analyze all the causes and effects is very complicated and good graduate student type work. We do know that the Sheldon and Hart Mountain Biological Units are now supporting more antelope than we have had in close to 30 years.

Table III. Summer Herds Ratios

Kids/100 Does			
<u>5-year Average</u>	<u>Sheldon Biological Unit</u>	<u>Hart Mountain Biological Unit</u>	<u>Combined Biological Unit</u>
1955-59	66	66	66
1960-64	66	65	66
1965-69*	33	32	32
1970-74	25	33	28
1975-79	28	37	33
1980	32	20	27
1981	45	40	43

*Predator control was discontinued after 1964

Table IV. Summer Herd Ratios

Kids/100 Adults			
<u>5-year Average</u>	<u>Sheldon Biological Unit</u>	<u>Hart Mountain Biological Unit</u>	<u>Combined Biological Unit</u>
1955-59	45	48	46
1960-64	46	47	47
1965-69*	21	23	21
1970-74	17	26	20
1975-79	21	30	26
1980	26	15	21
1981	33	29	32

*Predator control was discontinued after 1964

D. Harvest

Limited hunting programs continued on Hart Mountain and Sheldon in 1981, with 20 tags available on Hart Mountain and 30 (2 seasons of 15 each) on Sheldon. Success was very good on the hunts with

Sheldon hunters taking 29 out of 30 and Hart Mountain 100%. The average Boone & Crockett score for Sheldon was 76-3/8 and Hart Mountain slightly lower at 72-2/8. Sheldon produced the largest buck (for the 5th straight year) scoring 86-6/8, Hart Mountain the smallest scoring 55-7/8, which incidentally was the oldest buck taken. Tables V. and VI. summarize hunt results from the two refuges.

Antelope hunting on Sheldon and Hart Mountain are considered very high quality hunts with respect to a limited number of hunters and many high scoring bucks available. The 1981 hunts had eight bucks meet or exceed the minimum score of 82 for qualifying in the Boone & Crockett record book (7 on Sheldon, Hart Mountain 1). On Sheldon 24% of the bucks taken were done so on the first day of the hunt, on Hart Mountain, 78% of the bucks were shot on the first day.

Table V. Summary of Sheldon Hunt

	<u>No. Hunters</u>	<u>% Success</u>	<u>Boone & Crockett Scores</u>		
			<u>High</u>	<u>Low</u>	<u>Average</u>
1981	30	97	86-6/8	67	76-3/8
1980	30	97	86-0/8	66-4/8	75-4/8
Ten Year Average 1970-79	20	95	84-4/8	59-4/8	73-6/8

Table VI. Summary of Hart Mountain Hunt

	<u>No. Hunters</u>	<u>% Success</u>	<u>Boone & Crockett Scores</u>		
			<u>High</u>	<u>Low</u>	<u>Average</u>
1981	18	100	82	55-7/8	72-2/8
1980	15	93	82-2/8	69-4/8	76-1/8
Ten Year Average 1970-79	15	91	79-6/8	58-2/8	70-4/8

In 1981, tooth samples were sent to Matson's in Montana for age determination analysis on male antelope taken during the 1980 and 1981 hunting seasons. Generally, it appears that we underestimated the age of the animals by about one year in field examinations of tooth replacement, versus sectioning and laboratory analysis, although the processing lab still indicates a certain degree of possible error on a large portion of the samples. It can reasonably be determined, however, that the greatest percentage of bucks taken each year are between the ages of 3 1/2 to 6 1/2. It also appears that small horn measurements can be associated to very young bucks and also very old bucks--bucks 9 years old or older.

II. RANGE SURVEYS

A. Weather Conditions

Weather conditions on Hart Mountain and Sheldon were strikingly different during 1981, although, only 40 miles apart. It seems as though the storms just missed Sheldon and hit Hart Mountain.

A fairly mild winter, for the second year in a row, allowed antelope herds to remain scattered throughout the Biological Units. Surveys of radio collared antelope indicate that a few animals never left Hart Mountain during the winter of 1980-81.

Snow accumulations on Sheldon were lowest in several years creating little or no run-off. Spring rains did allow for ample forage production and the over-all crop year was estimated to be above normal. Insufficient winter moisture and little run-off did cause dry-ups of numerous water areas on Sheldon by late summer. Good fall moisture was received to prevent some real drought potentials however.

On the other hand, every storm that went through the country hit Hart Mountain. Although snow depths were below normal, storms occurred with enough frequency to have adequate water available in all units plus create a crop year calculated to be 145% of normal.

B. Range Modifications

Very little construction money was available for 1981 and consequently refuge improvement projects were fewer in numbers compared to the last 2 years. Spring development and rehabilitation and fence construction projects were accomplished in Bald Mountain, Badger and Fish Creek Units, on Sheldon. Fencing realignment continued on Hart Mountain.

No wild horses were removed from Sheldon during 1981. Big Springs Table remains to be cleared of approximately 70 head and recruitment in other units is nearing levels that removal will be necessary within the next year or two.

C. Range Evaluation

Extensive monitoring systems are being employed on both Hart Mountain and Sheldon using photo points, trend surveys, and utilization checks annually in most areas.

III. MISCELLANEOUS EVALUATIONS

A. Disease

None observed or reported.

B. Predation

Nothing unusual to report.

C. Research

A study by Ph.D. candidate Jo Meeker of the University of Montana, on "Movements, Breeding Behavior, and Reproductive Health of Pronghorn on the Sheldon National Wildlife Refuge", as outlined in the 1980 transaction report, continued during 1981. Meeker essentially completed his study in December of 1981, but we do not have any data to report from that study yet.

Although not directly associated with antelope but one which may have management implications indirectly influencing antelope, a new study was initiated on Badger Mountain to evaluate the effects of a deferred cattle grazing system on wildlife habit, wildlife use, and on the number of small birds and mammals. A 1,200 acre cattle enclosure was

constructed on the mountain allowing comparisons in vegetative responses to be made along with comparisons in wildlife uses. The primary vegetation community concerned is sagebrush-bitterbrush and curlleaf mahogany. Data from 1981 has not been analyzed as yet and not available for this publication. We hope to report more fully in 1982. This study is to run at a minimum--5 years, hopefully for ten, and when concluded should provide us with a great deal of information which can be applied to a wide range of wildlife species.

IV. SUMMARY

- A. The winter of 1980-81 was relatively mild allowing antelope populations to remain scattered within the Biological Units.

The summer census classified the highest number of antelope (3,283) since regular patterned census techniques were adopted in 1955.

- B. The combined bucks/100 doe ratios were higher than has been seen in many years, at 34/100.
- C. Production was higher during 1981 than has been seen for several years with a ratio of 43/100, kids: does, present on the combined units.
- D. Hunting during 1981 was again considered an excellent high quality hunt with success on Hart Mountain and Sheldon, 100% and 97% respectively.
- E. Range improvement projects continued during 1981 but at a much lower level due to funding restrictions. Water development projects coupled with fencing realignments are still priority projects.

V. RECOMMENDATIONS

A. Hunting

Hunting permit numbers to remain at current levels:
Hart Mountain - 20, Sheldon - 30.

B. Range Modification

Continue to move toward completion of range improvement plans; to fully implement the Coordinated Resource Management Plan.

C. Predator Control

None planned.

D. Research

Denver Wildlife Research Center will continue to study the effects of grazing as a management tool.

NORTHWESTERN NEVADA ANTELOPE STUDIES

JIM JEFFRESS, GAME AGENT II

NEVADA DEPARTMENT OF WILDLIFE

I. HERD SURVEYS

A. Annual Census

Mid-winter surveys were conducted in the middle of February this past year in Washoe County. Overcast and broken snow conditions made census conditions less than ideal over the two and one-half days of survey time. A total of 3,785 antelope were counted during the flights. Humboldt County was surveyed just after the Washoe flights in much the same conditions. The count yielded 919 antelope for a combined total of 4,704 in Washoe and Humboldt Counties. The count represents a 13.5% increase over the previous record count of 4,146 antelope obtained in 1980. A Cesena 206T was used for all the survey work.

Even with the relatively mild open conditions this past winter, heavy concentrations of antelope were observed in the same wintering areas. The total number of groups within the standard survey routes did not fluctuate appreciably.

Post survey coordination with California Fish and Game indicated that there was minimal interstate movement into Nevada at the time of the flights. Also, a transmitters buck from the Sheldon was observed in a large herd on the south end of Massacre Bench. The animal had moved ten to twelve miles south from its summer range on the Sheldon. The finalized report on the Sheldon telemetry study will hopefully identify any additional or intermittent wintering areas for the Sheldon population.

The increased sample sizes over the past few years are thought to be the result of more complete identification of wintering areas through the adoption of mid-winter flights. The traditional March flights were dropped and replaced with the late January and early February flights in 1979. Since that period a telephoto camera has been used to aid in counting the larger herds encountered in Washoe County. This past year the herd sizes ranged from eight to two hundred and ninety-two antelope.

B. Buck-Doe Ratio

The 1981 summer composition flights were conducted in all but one unit with a department B-1 helicopter. The Santa Rosa Unit (Area 5) was surveyed with a Cesena 206T. A total of 3,249 antelope were classified between Washoe and Humboldt Counties with a ratio of

39 bucks per 100 does. When separated, Washoe County yielded a ratio of 38 bucks per 100 does while Humboldt County had 40 bucks per 100 does. The 1980 surveys were very similar with 3,151 antelope being classified and a ratio of 38 bucks per 100 does.

Yearling buck information was again collected from the helicopter in an attempt to measure the previous year's kid survival. This is the fourth year that the data has been collected in Washoe County. The 1981 surveys indicated 24 yearlings per 100 does, a 39% reduction from the 1980 ratio of 39 kids per 100 does.

C. Production

The August composition flights resulted in an overall ratio of 38 kids per 100 does. That figure represents a 9.5% decrease from the 1980 level of 42 kids per 100 does. Washoe County had a ratio of 36 kids per 100 does and 42 kids per 100 does in Humboldt County.

The overall ratio is a compilation of data from seven management units (see Table II) between the two counties. Habitat types and range conditions on a yearlong basis vary greatly from unit to unit as evidenced in the divergent kid ratios.

Drought conditions prior to kidding and through the summer months may very well be responsible, in part, for the apparent poor kid survival. However, in analyzing the yearling recruitment in Washoe County over recent years (14 yearlings/100 does - 1978; 32 - 1979; 30 - 1980; 24 - 1981), it is evident that the production segment of the herd in the yearling to four year old class is at the low end of the scale relative to herd maintenance. This factor, coupled with natural attrition on the adult doe segment, may account for the reduction in producing does and subsequent decrease in kid ratios. It would appear that the herd is caught in a self-limiting situation due to the fact that a portion of the productive segment of the herd is depressed. The influencing factors may be a result of a limiting population mechanism coming to play on a population that may very well have plateaued in size. The recruitment problem appears to be evident in all the units with the exception of Summit Lake and Smoke Creek.

D. Harvest

A total of 396 regular season tags were available in eight harvest units including the Sheldon. All but two hunters returned report cards after the follow-up mailing and at the close of the mandatory reporting period. Those hunters were subsequently contacted with the pertinent information being obtained at that time. The reports indicated that 379 hunters participated in the hunt and

harvested 334 antelope for an overall success rate of 88%.

The percent success levels ranged from 95% in the Kings River Unit to 80% in the Smoke Creek and Tule Units. Harvest data for 1981 is shown in Table III.

A two week archery hunt was again held prior to the regular rifle season last year. Two hundred tags were issued for the state with 138 being allocated to Washoe and Humboldt Counties in proportion to the number of available rifle tags. A total of 137 tags were sold with 123 archers reporting that they actively participated in the hunt. The combined harvest for both counties was nine antelope for an overall success rate of 7.3%.

The annual check station was held in Gerlach over the opening weekend of rifle season. Age data and Boone and Crockett scores collected on 104 antelope are shown in Table IV. Age data, due to reliability of incisor replacement, was only collected through the three year old age class animals. Past data collected was converted to reflect consistency of information. The harvest continues to indicate a preference for the mature age class bucks with 72% being three years old or more. The average green Boone and Crockett score was 70.11 inches in 1981.

A voluntary indoctrination session has been offered to Washoe County tag holders over the past two years. The session exposes the hunter to general knowledge on the life history of antelope, identification of mature bucks, and trophy quality. Approximately 15-20% of the tag holders have been processed through the sessions. The positive results are difficult to gauge, but the percentage of yearlings in the harvest has been reduced by more than half over this period as compared to the previous six years.

II. RANGE SURVEYS

A. Weather-Precipitation

The Reno weather station reported 3.87 inches of precipitation for the past climatological year (10/80-9/81), which represents a 46% decrease from the long-term average. The northern most station, Dufurrena, showed 5.1 inches which is a 26% departure below normal. Overwinter soil moisture and precipitation through the spring months was very poor and left plant production at a minimal level. Some relief was obtained in late May, but most ranges were in a very desiccated state early in the summer. That situation continued through September with little or no relief.

Water availability was also very poor leading into the early summer months and steadily deteriorated into early October. Many

springs and seeps were observed to be dry early on in the season

Many of the same springs flowed through the drought years of 1976-77. Some traditional summer ranges were devoid of any animals with relocation and subsequent concentrations being common.

B. Range Modifications

There were no major range modifications undertaken on northwestern Nevada antelope ranges this past year. Approximately 14,000 acres of vegetal treatments are planned in Washoe County for this coming spring by Bureau of Land Management, but are contingent on funding. The environmental assessments have been completed with little or no impacts on antelope.

C. Range Evaluation

With the exceptionally dry conditions and poor plant production this past growing season, the general range conditions were depreciated from the past few years. As water availability became reduced through the grazing season, some areas were subjected to high levels of use by all ungulates concentrating in and around those sources. The results varied considerably from area to area but the conditions were generally poor.

As environmental impact statements are finalized relative to grazing on public lands, and allotment management plans are developed (through whatever means) and implemented over the years to come, it is hoped that both range condition and trend can be improved significantly over the present status. Currently, most of the final environmental statements are completed throughout the areas affecting antelope ranges in northwestern Nevada. To date, the process has been started to implement the criteria from those statements on an allotment level. A number of allotment grazing systems have been developed in northern Washoe County with some being implemented. Others are in various stages of progress contingent on rangeland developments and appropriate funding.

III. MISCELLANEOUS EVALUATION

A. Disease

None was reported in 1981.

B. Predation

None was reported

C. Food Habits

None reported.

IV. SUMMARY OF DATA

A. Mid-winter surveys produced a count of 4,704 antelope, a 13.5% increase over the previous record count of 4,146 in 1980.

B. Buck ratios remain at a high level with preseason August ratios of 39 bucks per 100 does.

C. Yearling buck numbers from the August composition flights revealed a 39% loss of the 1980 kid crop in Washoe County.

D. The 1981 kid crop is at a very low level with 38 kids per 100 does. A 9.5% decrease from the 1980 levels.

E. Exceptionally low precipitation levels over most of the antelope ranges in northwestern Nevada resulted in drought conditions this past summer. General range conditions were poor as a result of plant production and concentrated use patterns through the grazing season.

V. RECOMMENDATIONS

A. Continue annual aerial herd composition surveys to measure antelope population trends and production. The use of the helicopter during summer composition flights should be maintained in order to derive more accurate data and gain larger sample sizes.

B. Continue trophy hunts based on surplus bucks available by unit.

C. Continue to monitor the impact of various grazing systems and revegetation projects on antelope populations.

D. Continue to work with the land management agencies and provide updated information relative to numbers and recommendations for habitat needs.

TABLE I
Population Trend

<u>Unit</u>	<u>1977</u>	<u>1978</u>	<u>1979</u>	<u>1980</u>	<u>1981</u>
New Year Lake	422	244	175	NC	430
Hart Camp	898	1,204	1,274	2,611	2,513
Smoke Creek	694	538	918	473	730
Tule Peak	-	-	-	35	112
Summit Lake	237	270	295	412	374
Kings River	36	96	136	190	166
Santa Rosa	332	323	385	425	379
TOTAL:	2,619	2,675	3,183	4,146	4,704

TABLE II
Herd Composition 1981

<u>Unit</u>	<u>Number Classified</u>	<u>Bucks</u>	<u>Does</u>	<u>Kids</u>	<u>B/100D</u>	<u>K/100D</u>
New Year Lake	427	58	309	60	19	19
Hart Camp	1,149	272	642	235	42	37
Smoke Creek	784	194	394	196	49	50
Tule Peak	70	13	45	12	29	27
Summit Lake	282	73	137	72	53	53
Kings River	228	47	134	47	35	35
Santa Rosa	354	71	204	79	35	39
TOTAL:	3,294	728	1,865	701	39	38

TABLE III
Harvest 1981
Regular Season

<u>Unit</u>	<u>No. Tags</u>	<u>No. Return</u>	<u>No. Hunting</u>	<u>Harvest</u>	<u>Percent Success</u>
New Year Lake	35	35	31	26	84
Hart Camp	136	136*	132	120	91
Smoke Creek	100	100	92	74	80
Tule Peak	5	5	5	4	80
Summit Lake	40	40	40	37	93
Kings River	20	20	19	18	95
Santa Rosa	30	30	30	26	87
Sheldon	30	30	30	29	97
TOTAL:	396	426	379	334	88

* Information from two delinquent tags included.

TABLE IV
Antelope Age Class Distribution

<u>Year</u>	<u>Yearlings</u>		<u>2 Years</u>		<u>3 Years & Older</u>		<u>Total No.</u>
	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	<u>No.</u>	<u>%</u>	
1974	7	10.9	16	25.0	41	64.1	64
1975	1	2.9	3	8.5	31	88.6	35
1976	6	18.2	6	18.2	21	63.6	33
1977	19	21.8	20	23.0	48	55.2	87
1978	11	12.4	17	19.1	61	68.5	89
1979	12	14.8	15	18.5	54	66.7	81
1980	6	6.6	16	17.6	69	75.8	91
1981	7	6.7	22	21.2	75	72.1	104
TOTAL:	69	11.8%	115	19.7%	400	68.5%	584

TABLE V
Average Boone and Crockett Score by Age Class

<u>Year</u>	<u>Yearlings</u>		<u>2 Years</u>		<u>3 Years & Older</u>		<u>No.</u>	<u>Total</u>
	<u>No.</u>	<u>Avg. Score</u>	<u>No.</u>	<u>Avg. Score</u>	<u>No.</u>	<u>Avg. Score</u>		
1974	7	55.0	16	65.49	41	71.57	64	68.24
1975	1	42.5	3	63.0	31	71.20	35	69.68
1976	6	51.63	6	66.58	21	71.60	33	67.06
1977	19	54.7	20	69.68	48	73.57	87	68.56
1978	11	48.2	17	69.75	61	73.15	89	69.42
1979	12	50.6	15	68.99	54	73.07	81	69.12
1980	6	46.54	16	65.69	69	72.49	91	69.59
1981	7	45.54	22	69.32	75	72.63	104	70.11
TOTAL:	69	50.90	115	68.06	400	72.58	584	69.15

1981 ANTELOPE STATUS REPORT
STATE OF OREGON
DEPARTMENT OF FISH AND WILDLIFE

James C. Lemos - Wildlife Biologist

I. HERD SURVEYS

A. Annual Census

The aerial census for 1981 was completed during February and March (Table 1). One of the most open winters in recent years allowed antelope herds to be widely scattered. These scattered groups were much more difficult to locate, and resulted in a lower census total (8,904) than for the previous year (10,310). The total population was felt to be similar to 1980 (12,000), due to the excellent wintering conditions. The overall antelope-per-mile index was 2.1, very similar to the ten-year average of 2.2.

B. Buck-Doe Ratios

Composition of Oregon's antelope herds was determined during late July and early August 1981. Both aerial and ground counts were used, with most aerial classification performed from fixed-wing aircraft. A total of 3,699 antelope were classified in 1981 with a pre-season buck ratio of 29 per 100 does (Table 2). This represents another slight increase in buck ratios and puts it above the 10-year average of 26 per 100 does. Classification by individual management unit shows considerable variation, much of which is due to small sample sizes (Table 2).

C. Fawn Production

The fawn production estimate made during the July/August classification period was 28 fawns per 100 does (Table 2). That was down from the previous year and the ten-year average which were both 33 fawns per 100 does. The fawn production decline is typified by data from the Harney District where an average of 3,300 antelope have been classified each fall since 1947 (Table 3). Since 1957 there has been nearly a 50% decline in the five-year average (from 60 down to 34 fawns per 100 does). In spite of low annual recruitment, however, the overall state population has been generally increasing. The indication is that mortality via harvest and winter loss is not offsetting the low fawn recruitment. One explanation for this relationship is that herds are expanding into fringe areas being developed for agriculture which is increasing the habitat base. Increasing recruitment on these lands, coupled with maintenance-level recruitment on native ranges, has led to a very slow increase in overall antelope numbers.

D. Harvest

A total of 1,915 antelope permits were authorized in 1981. Only 1,834 of those were issued to successful applicants. The remaining

81 permits were not paid for by successful applicants, and no procedure was available for alternates to purchase those tags.

Harvest estimates obtained by a voluntary report card indicated a 78% success rate for rifle buck hunters based on a 65% report card returned (Table 4). An expansion of the number of hunters participating and their success rates provided a harvest estimate of 1,125 antelope in 1981. Of that total, 989 were taken during buck rifle season, 125 were does, and 11 were taken by archery hunters. This is an increase over the harvest of 1,068 in 1980 (incorrectly presented as 893 in 1980 Proceedings).

The success rate for rifle buck hunters increased by 2% over 1980, and was an 8% increase in the last 3 years. There are apparently adequate buck numbers to sustain the minimal harvest authorized in Oregon. The average quality of the trophy taken, coupled with hunter congestion on concentrated herd ranges, are the limiting factors on the number of tags authorized.

Issuance of controlled season doe permits continues to be an acceptable method of handling antelope damage problems on agricultural lands. Harvest success (73%) is lower than during buck season because the doe hunts are scheduled after buck season to avoid dispersal of trophy animals.

II. RANGE SURVEYS

A. Weather Conditions

Antelope ranges in southeastern Oregon experienced a very mild, open winter in early 1981. Animals were scattered over all available ranges with green feed present. A normal spring was followed by heavy rains during the late May-early June fawning period which filled most rangeland waterholes. Normal summer and early fall conditions were followed by intense storm conditions which began the first of October. Antelope were moving toward winter ranges during November 1981, and deep snows of late December pushed most herds to even lower elevations than normal.

B. Range Modifications

Conversion of sagebrush-grassland ranges to annual-perennial grasslands remains the major range modification on antelope ranges in Oregon. Chemical spraying, fires, and plowing or brushbeating are the primary methods used. A planning update in Harney County revealed that between 1970 and 1980 a total of 47,338 acres of sagebrush-grassland was converted to annual-perennial grassland. Similar changes occurred over most sagebrush ranges of southeastern Oregon.

Irrigated agricultural developments on private lands continue to expand antelope range into previously unused areas. Damage to alfalfa crops is becoming a major problem on some ranges, and specific populations may have to be reduced or eliminated.

C. Range Evaluation

Excellent weather conditions through winter, spring, and early summer produced excellent green forage and water distribution for antelope. The dry, hot summer continued into September, and fall moisture did not begin until the first of October, too late for significant early green-up. The wet fall caused most winter ranges to be in fairly good condition when antelope reached them in November and December.

III. MISCELLANEOUS

A. Diseases and Parasites

No significant outbreaks or evidence of diseases or parasites were noted for antelope in Oregon in 1981.

B. Research

Two graduate research projects completed field studies during the year and students are back at Oregon State University completing classwork and data analysis prior to write-up. The relationship between wild horse utilization of the range and antelope, deer, and bighorn sheep were studied in Malheur County.

The first year of an antelope project by the Oregon Department of Fish and Wildlife was completed in 1981. Results and description of the study follow this report.

IV. SUMMARY

- (1) Antelope census for 1981 was 1,406 animals less than 1980 because of open weather and widely scattered herds. The total population was similar to that of 1980, about 12,000.
- (2) Buck ratios increased for the second consecutive year to 29 per 100 does, which was above the ten-year average of 26 per 100 does.
- (3) Fawn production, as measured in late July/early August, showed a continued decline. The ratio of 28 fawns per 100 does was below 1980 and the ten-year average, which were both 33 fawns per 100 does. Fawn:doe ratios have decreased almost 50% from 1957 to 1981.
- (4) A total of 1,915 permits were authorized for antelope in 1981. Only 1,834 were issued, and 1,125 antelope were estimated to have been taken. This represents less than 10% harvest of the total population annually.
- (5) Weather conditions were excellent during winter and spring. Summer was dry and hot. Fall green-up was late, but winter ranges were in good condition.
- (6) Two graduate studies are being written up and one year of an Oregon Dept. of Fish and Wildlife study was completed. Preliminary results of the agency research project follow.

Oregon Pronghorn Study Update
Mitchell J. Willis, Asst. Project Leader

In September of 1980, planning was initiated on the Oregon Pronghorn (Antilocapra americana) research project. The principle objectives were to 1) determine the causes, incidence and timing of pronghorn fawn mortality, and 2) describe the utilization of available habitats by fawns.

Two study areas were selected. The first, Jack Cr., is a high desert native shrub range with traditionally low fawn recruitment (23:100 in August). The second study area, Bear Valley, is a shrub-grassland interior valley, mostly converted in recent years to grass and grass-legume seedings. Recruitment is much higher here (70:100).

In the winter of 1980-81, 16 does of breeding age were collected at 2-month intervals to determine fetal rates and physical condition. Of the 16 does collected, 15 were pregnant with twins for a fetal rate of 1.88. A 16 year old doe was not pregnant.

Examination of fat deposits demonstrated no significant difference ($P > 0.05$) in condition between collection periods. Perirenal fat, kidney fat index, and femur marrow fat tests showed a downward trend from December, with femur marrow fat recovering from February to April.

Fawns were captured and outfitted with radiotransmitters from 14 May to 1 June. In all, 57 fawns 1 to 7 days of age were captured and used in the samples, 18 at Jack Cr., and 39 at Bear Valley.

Radio signals were checked every other day. Mortality sensors were used to limit disturbance. When a mortality was indicated, efforts were immediately made to locate the collar and any remains of the fawn. Cause of death was determined, where possible, through the use of a dichotomous mortality key developed in the Steens Mountain Mule Deer Study.

By 19 September, 100% of the instrumented fawns at Jack Cr., and 95% of the fawns at Bear Valley had succumbed. About 50% of the mortality at both areas was attributed to coyotes (Canis latrans), 10% to bobcats (Lynx rufus), 15% to unknown mammals, 5% to golden eagles (Aquila chrysaetos), and 20% to unknown causes. Within the first 15 days of life, 50% of the fawns had died.

Fawns were located every 8 days to gather habitat utilization information. At each location, vegetative factors such as percent canopy cover and height and physical factors such as slope and soil characteristics were measured. Eight vegetation types were defined and used by fawns at Jack Cr. Three types: early low sage (Artemisia longiloba)/Sandbergs bluegrass (Poa sandbergii), early low sage/Sandbergs bluegrass-bottlebrush squirrel-tail (Sitanian hystrix), and early low sage-Wyoming big sage (Artemisia tridentata wyomingensis)/Sandbergs bluegrass-bottlebrush squirreltail comprised 89% of all fawn locations. Fifteen vegetation types were defined and used by fawns at Bear Valley. Crested wheatgrass (Agropyron cristatum) seedings and seasonal wet meadows made up 65% of all sites used by fawns, with the seedings used more heavily early in the season, and the meadows used more heavily later.

Cover height and phenology analysis have been completed only on the first month's data. Overall, shrubs had an average height of 29 cm and canopy coverage of 10%, forbs had an average height of 13 cm and canopy coverage of 23%, and grasses had an average height of 31 cm and canopy coverage of 28% for this time period.

During the 1982 field season, the entire study areas will be vegetation-typed. When this work is completed, analysis should provide information on which characteristics are selected for by pronghorn, and at what level.

Home range information was gathered from fawn utilization locations. Overall, the home range of fawns for the first month of life averaged about 600 ha. The fawns at Jack Cr. appeared much more mobile than their counterparts at Bear Valley.

Study Area	Location	Area (ha)	Shrub Height (cm)	Shrub Canopy (%)	Forb Height (cm)	Forb Canopy (%)	Grass Height (cm)	Grass Canopy (%)
Interagency	Lake	59	100	3.2	2.0	1.9		
Dunlap	Bearway	240	87	2.7	2.3	2.6		
	Lake	10	89	2.9	2.7	2.7		
Yellow River	Bearway	240	87	2.6	2.1	2.0		
	Ballou	270	100	2.9	2.2	2.0		
Bart	Ballou	300	8	0	2.6	2.6		
	Yellow	270	207	2.0	2.8	2.1		
Anderson Creek	Bearway	40	110	2.2	0	2.4		
Chaco	Bearway	270	100	2.8	0	2.6		
Dayton	Ballou	270	730	2.0	2.3	2.2		
Pauline-Highway	Ballou	410	500	2.2	1.0	2.0		
	Bearway	10	30	2.4	0	2.0		
	S. Lake	10	110	2.2	2.2	2.2		
	N. Lake	25	97	2.7	1.2	2.2		
Bluffs	Ballou	270	271	2.2	2.4	2.0		
	Bearway	10	211	2.2	2.2	2.0		
Sierra Mountains	Bearway	220	220	2.2	2.1	2.0		
Warren	Lake	200	217	2.2	2.2	2.0		
Whitehorse	Ballou	< 100	220	2.2	2.2	2.2		
TOTALS AND AVERAGE		4,270	6,804	2.1	2.0	2.2		

1981 AERIAL ANTELOPE INVENTORY

Unit	District	Miles	Antelope	Antelope per Mile		
				1981	1980	10-Year Average
Beatys Butte	Harney	900	1,913	2.1	2.3	2.6
Beulah	Malheur	200	435	2.2	3.2	2.3
Ft. Rock-Silver Lk.	Lake	175	327	1.9	1.4	1.0
Grizzly	Ochoco	20	68	3.4	2.7	2.6
Interstate	Lake	50	164	3.3	3.0	1.9
Juniper	Harney	240	894	3.7	3.5	2.6
	Lake	50	95	1.9	4.7	3.7
Malheur River	Harney	140	665	4.8	6.7	6.0
	Malheur	100	105	1.1	0.4	0.6
Maury	Deschutes	200	0	0	0.6	0.8
	Ochoco	125	207	2.2	4.8	3.1
Murderers Creek	Harney	40	118	3.0	0	2.4
Ochoco	Ochoco	125	185	1.5	0	1.6
Owyhee	Malheur	290	729	2.5	2.3	2.5
Paulina-Wagontire	Deschutes	450	564	1.3	1.6	1.6
	Harney	60	36	0.6	0	0.8
	N. Lake	50	121	2.4	2.5	1.8
	S. Lake	95	67	0.7	1.4	2.5
Silvies	Ochoco	125	271	2.2	5.4	2.5
	Harney	60	351	5.8	5.2	1.8
Steens Mountain	Harney	220	624	2.8	3.1	2.5
Warner	Lake	105	417	4.0	4.3	4.0
Whitehorse	Malheur	400	485	1.2	1.8	1.3
TOTALS AND AVERAGES		4,220	8,904	2.1	2.4	2.2

Table 2
1981 ANTELOPE HERD COMPOSITION

Area	Antelope Classified				Bucks Per 100 Does			Fawns Per 100 Does		
	Bucks	Does	Fawns	Total	1981	1980	*Ave.	1981	1980	*Ave.
Beatys Butte	55	248	67	370	22	25	26	27	40	39
Beulah	16	40	10	66	40	18	32	25	43	40
Grizzly	9	22	9	40	41	42	41	41	47	41
Interstate	12	16	23	51	52	32	42	70	18	36
Juniper	75	135	19	229	56	44	25	14	23	23
Malheur	90	255	90	435	35	27	32	35	40	40
Maury	6	17	5	29	35	42		29	11	
Murderer's Cr.	31	100	45	176	31	35	45	45	73	63
Ochoco	32	202	46	280	16	35	29	23	28	48
Owyhee	61	186	60	307	33	34	23	32	33	25
Paulina-Wagontire	103	318	29	450	32	24	24	9	21	18
Silver Lake-Fort Rock	39	167	68	274	23	33	34	41	40	49
Silvies	38	109	4	151	35	27	24	4	32	23
Steens Mtn.	29	150	44	223	19	19	25	29	31	31
Warner	8	78	34	120	10	30	17	44	27	28
Whitehorse	72	315	112	499	23	24	19	36	29	28
TOTALS AND AVERAGES	676	2,358	665	3,699	29	28	26	28	33	33

* Ten-year average

Table 3. Fawn production at five-year intervals in the Harney District, Oregon from 1947 to 1981.

Years	Average Fawn:Doe Ratio $\frac{1}{100}$
1947-51	90
1952-56	44
1957-61	60
1962-66	50
1967-71	44
1972-76	36
1977-81	34

$\frac{1}{100}$ Fawns per 100 does

TABLE 4

1981 ANTELOPE SEASON
(65% Report Card Return for Rifle Buck Antelope Hunters)

Hunt Number	Name of Area	Tags Issued	Report Cards Received	Number Did Not Hunt	Number Hunted	Reported Harvest	Percent Success	Hunter Days
435A	Paulina-North Wagontire Units	50	31	2	29	19	66	87
436	Maury Unit	50	29	0	29	20	69	67
437	Ochoco Unit	78	41	0	41	32	78	68
446	Murderers Creek Unit	49	30	1	29	20	69	65
451A	North Sumpter Unit	10	8	0	8	7	88	15
451B	South Sumpter Unit	10	6	1	5	5	100	8
464	Lookout Mountain Unit	20	15	0	15	12	80	34
465	Beulah Unit	75	55	2	53	40	75	111
466	Malheur River Unit	148	107	5	102	86	84	200
467	Owyhee Unit	75	44	5	39	31	79	80
468	Whitehorse Unit	150	89	1	88	76	86	169
496	Steens Mountain Unit	147	95	5	90	59	66	257
470A	East Beatys Butte Unit	100	69	1	68	57	84	145
470B	West Beatys Butte Unit	60	46	3	43	35	81	78
470C	National Antelope Refuge	20	13	1	12	12	100	14
471	Juniper Unit	100	67	3	64	48	75	135
472	Silvies Unit	49	32	2	30	28	93	54
473A	South Wagontire Unit	25	11	0	11	11	100	24
474	Warner Unit	35	19	0	19	15	79	38
475A	East Interstate Unit	49	34	2	32	21	66	68
476A	Fort Rock-Silver Lake Units	20	15	0	15	6	40	41
TOTALS		1,320	856	34	822	640	78	1,753
437A	Portion of Ochoco Unit (Does)	48	36	1	35	27	77	76
466A	Malheur River Unit (Does)	132	82	5	77	55	71	187
TOTALS		180	118	6	112	82	73	263
475B	Gerber Reservoir (Bow)	179	128	38	90	0	0	294
475C	Gerber Reservoir (Bow)	155	123	49	74	4	5	308
TOTALS		334	251	87	164	4	5	602

ESTIMATED TOTAL HARVEST: 912

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